Item #15: Old-Growth Forest
Item #69: Old-growth Forest by Sub-basin

Evaluation Question: How much old growth is there? How do management actions affect old-growth? How do existing old-growth conditions compare with the estimated range of natural variability?

Resources to be measured:

- Proportion of forest vegetation in old-growth condition

Data Sources:

- *Estimates of Old Growth for Northern Region and National Forests*, May 2007 (updated)
- R1 FIA Summary Database Reports

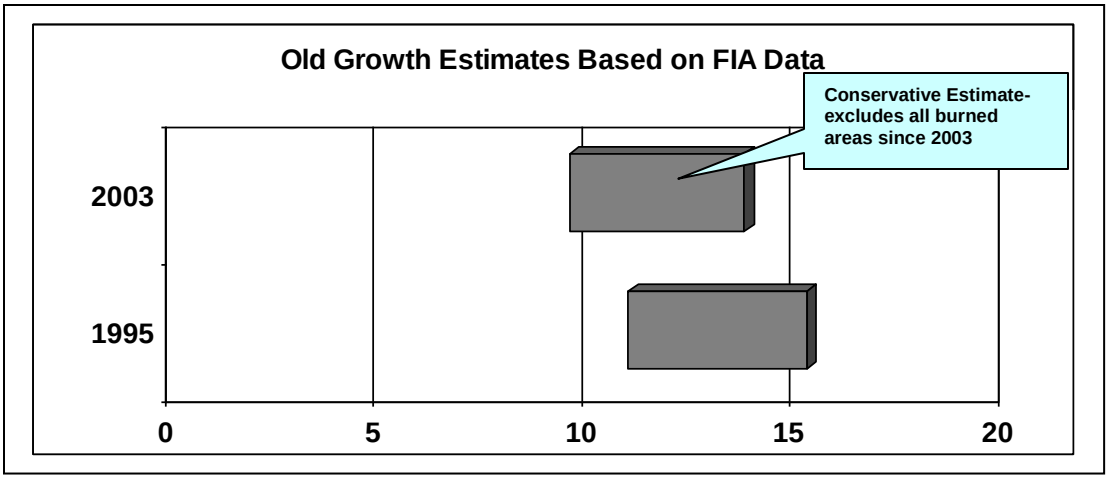
This monitoring item was established in 1999 with completion of Amendment 21 to the Forest Plan and was designed to look at changes in old-growth condition over time.

FIA data provides a systematic, statistically sound estimate of forest conditions, and can look at their change over the long term. Region One has developed a summary database which can compare the FIA data to Region One old-growth definitions, and derive estimates of old-growth conditions. These numbers, by subbasin are displayed below. Base data from FIA (1995) estimated 13.1% old growth with a confidence interval of 11% to 15.3%.

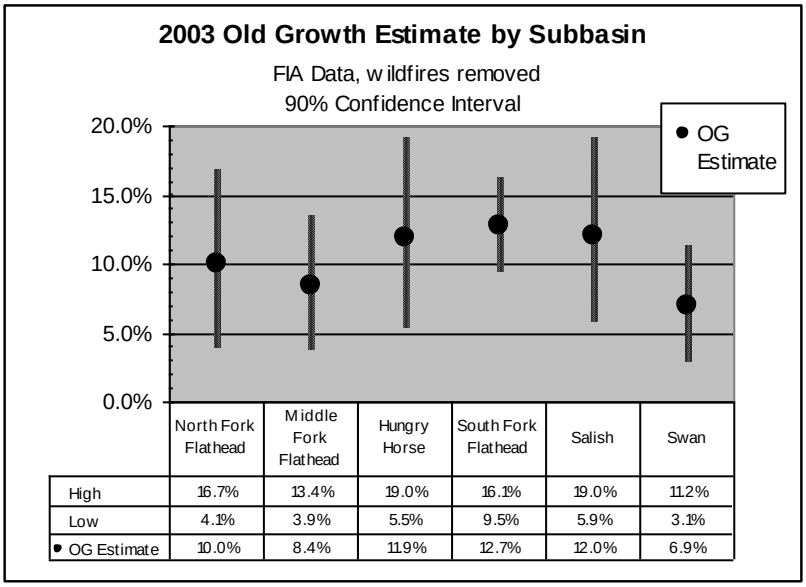
In 2007, old-growth data for the region was published, reflecting changes from 1994-5 through 2003. Any harvested areas were removed. Areas that had burned since the inventory in 1994-95, through 2003, were coded as not meeting old-growth definitions, yielding a conservative 2003 estimate of old growth. The 2003 estimated percentage of old growth on all forested lands on the Flathead National Forest is 11.6%,[1] with a 90% confidence interval of 9.6% to 13.8%. This estimate is based on 382 inventory plot clusters. This data indicates that the actual amount of old growth is equally likely to be anywhere within the range indicated.

Between base data collection (1993-94) and 2003, 19 Flathead Forest plot clusters burned over. Five are in areas previously classified as old growth, and they have not been re-measured to assess their old-growth status. These areas were coded as not meeting old-growth definitions, yielding a conservative 2003 estimate of old growth. The FIA cycle will need to complete post-fire remeasurement of plot clusters within fire perimeters to determine the true status of these areas. All of the old-growth plots affected by fire were in the South Fork subbasin. Between the base data collection and 2003, 10 FIA plots have had harvest activity, none classified as old growth.

[1] This figure reflects an update since the 2007 publication. An error in the summary database calculation for one old-growth group was corrected. Numbers displayed reflect the current R1 summary database estimate.



This data would suggest an 11% reduction in the mean estimate of old growth on the forest from 1995 to 2003.



	North Fork Flathead	Middle Fork Flathead	Hungry Horse	South Fork Flathead	Salish	Swan
High	16.7%	13.4%	19.0%	16.1%	19.0%	11.2%
Low	4.1%	3.9%	5.5%	9.5%	5.9%	3.1%
OG Estimate	10.0%	8.4%	11.9%	12.7%	12.0%	6.9%

This data does not include the fires from 2004 – 2008. An estimated 134,500 acres or 6% of the Flathead National Forest have burned in that timeframe. Since 2003, an additional 18 FIA plot clusters, including one classified as old-growth, have been affected by these fires, thus potentially further impacting current estimates of old-growth forest conditions. The Region is in the process of updating information in the FIA summary database to account for these burned over plot clusters, but it is not currently available.

The Flathead Forest FIA plots are re-measured over a 10-year period. This data over time will give a picture of changed old-growth conditions, with quantifiable accuracy.

This monitoring item is intended to look at conditions in comparison to natural variability, as well as at change in old-growth conditions over time. The Amendment 21 analysis (1998) looked at available data sources to assess historical old-growth

conditions, and historical variability. Historical old-growth conditions were estimated to vary widely over time at irregular intervals, in response to weather patterns, vegetation and fuel conditions. Variability by forest type and position on the landscape (high versus low elevation) were also noted. It was estimated in Amendment 21 that old growth across the forest was from 15-60% historically, with a wide range of conditions occurring.

Since the adoption of Forest Plan Amendment 21 in 1995, there has been no harvest within old growth, so changes that have occurred in that timeframe are due to natural processes -- in this instance, wildfire. Only one vegetation management project, to restore ponderosa pine old growth, is planned and currently under contract.

Evaluation

FIA data provides the best statistically sound way to estimate old-growth conditions at the forest and subbasin level. At present, our snapshots of data are limited to one measurement, but over time, this will be the most reliable way to track changes in vegetation, including old growth.

The baseline 1995 estimate, and the 2003 conservative estimate removing any plot clusters which may have been impacted by fire, include a great amount of overlap; i.e., there may be no significant difference, despite a lower estimated average value in 2003. Once re-measurement of the plots impacted by fire is complete, a more up-to-date determination will be obtained. In addition, over time, areas of late-seral forest may attain the characteristics needed to be classified as old-growth. Generally these stands may currently be lacking slightly in average age, or diameter of large trees, and over time may meet old-growth definitions. Thus, despite the long time it takes to "grow" an old-growth stand, over the next decade, additional old-growth may be identified.

Available data indicates that fires are resulting in a slight reduction in old-growth across the forest since 1995, and this is a continuing concern. It appears that the incidence of large fires is increasing due to a combination of factors including past successful fire suppression, general warming and drying climate, and lengthening of the fire season due to climate change. Fire is currently the largest processing acting on the forest landscape, and will likely continue to be so, shaping the future vegetation patterns and composition.

Amendment 21 to the forest plan signed in 1999, provided short-term direction to maintain or restore old-growth stands, with restoration emphasis in dryer, forests which historically had short fire intervals. During this monitoring period, management actions have not directly impacted any old-growth, but large-scale wildfires continue to act on the landscape, impacting all successional stages.

Recommended Actions

- Continue to monitor change over time using FIA or best available data.
- Look for opportunities to develop or restore old-growth stand structures during project analysis as per current Forest Plan direction.
- Emphasize old-growth restoration, protection, and future development of old-growth stand structures in forest plan revision desired forest conditions.